























Dimensional Analysis Continued		
 Example for an astronomical object where 1 teaspoon weighs 3 Tons. (~ 3 pick up trucks). 3 T /1 tsp →? g/cm³ (1 tsp = 4.9289 mL; 1 T (Ton) = 1,000 kg; 1 kg = 1,000 g; 1 mL = 1 cm³) 		
1.000 x 10 ³ 1.000 x 10 ³		
3 T 1 tsp 1 mL kg g = ?g T		
$1 \text{ tsp } \begin{vmatrix} mL \\ 4.9289 \end{vmatrix} 1 \text{ cm}^3 \begin{vmatrix} 1 & T \\ 1 & kg \end{vmatrix} 2 \text{ cm}^3 \qquad 6 \times 10^5 \text{ g/cm}^3$		











Dimensiona	al Analysis		
A metal sample is hammered into a rectangular sheet with an area of 31.2 f ^e and an average thickness of 2.30 × 10 ⁻⁶ cm. If the mass of this sample is 0.4767 g, predict the identity of the metal.			
The density of the metal is shown in parenthesis. Useful information: 1 $ft^2 = 929 \text{ cm}^2$			
A) Aluminum (2.70 g/cm³)	B) Copper (8.95 g/cm³)		
C) Gold (19.3 g/cm ³) What goes in here?	D) Zinc (7.15 g/cm³)		
0.	$\frac{g^{4767}}{g} = \frac{g}{g}$		
31.2 ft² 929 cm ² cm ² cm	? cm³		





	Dimensional Analysis Solved in 2 Steps	
A metal sample is hammered into a rectangular sheet with an area of 31.2 ft ² and an average thickness of 2.30 × 10 ⁻⁶ cm. If the mass of this sample is 0.4767 g, predict the identity of the metal. The density of the metal is shown in parenthesis. Useful information: 1 ft = 12 in; 1 in = 2.54 cm		
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QUESTION

Which would provide more grams of NaCl, sample one with a mass of 2,350 mg, or sample two, a solid with a volume of 2.00 cm³? (The density of solid salt is 2.16 g/cm³.) Select the most massive sample and its mass in grams.

- A. Sample two; 1.08 grams
- B. Sample two; 4.32 grams
- C. Sample one; 2.35 grams
- D. Sample one; 2.350 grams



Answer

Which would provide more grams of NaCl, sample one with a mass of 2,350 mg, or sample two, a solid with a volume of 2.00 cm³? (The density of solid salt is 2.16 g/cm³.) Select the most massive sample and its mass in grams.

- A. Sample two; 1.08 grams
- B. Sample two; 4.32 grams
- C. Sample one; 2.35 grams
- D. Sample one; 2.350 grams



2.16 g/cm³ x 2.00 cm³ = 4.32 g 4.32 g x 1000 mg / g = 4,320 mg

> Bouyancy Metal/concrete hull ships Mass Displacement (TONS)



QUESTION

The volume of any material can be obtained from its density and mass.

If the mass of a sample of acid from a battery were 5.00 grams and its density was 1.2 g/mL, what would the correct reported volume in mL with the proper number of significant digits?

Answer

The volume of any material can be obtained from its density and mass.

If the mass of a sample of acid from a battery was 5.00 grams and its density was 1.2 g/mL, what would the correct reported volume in mL with the proper number of significant digits?

A. 6.0 mL
$$V = m / d$$

B. 6.00 mL 5.00 g x 1.0 mL / 1.2 g = 4.2 mL

C. 4.2 mL D. 4.17 mL

Mass water = 9.54 g

d water = 1.00 g/mL9.54 g x 1mL/ 1 g = 9.54 mL









